Executive Summary

The expected effort for remediating the known foundation weakness of the Perris Dam, currently operating under a water level restriction, has been found to be significant by DWR, the SWC (MWD, CVWD, DWA), DPR, DFG, DBW, and other major stakeholders. Due to the significant impacts and cost involved for remediating Perris Dam, DWR's SWCs requested that DWR perform the present study in order to evaluate alternatives for permanently lowering, maintaining the existing lake level, or raising the normal maximum operating level of the reservoir. The goal was to determine whether any of these alternatives might be preferable to remediating the foundation and making the other improvements necessary for Perris Dam to safely impound Lake Perris at the as-designed reservoir elevation.

The reservoir options studied herein included a range from permanently emptying the reservoir to increasing the normal reservoir level to 1814 ft. for a total volume of 1,000,000 AF. Intermediate steps included reservoir volumes of 40,000, 72,000, 127,000 (as-designed normal operating condition; 131,452 AF at spillway level), 257,000, 500,000 and 700,000 AF. The previously mentioned volumes for the expanded reservoirs are nominal; the study was based on inclusion of a dam at the northeast end of the reservoir to protect habitat, and this reduces the nominal volume. Data on the eight reservoir options, which includes the empty reservoir option, is provided in Table 3.1

Each of the reservoir options will have multiple impacts, including various short-term construction impacts, the construction magnitude, water storage benefits, recreation in the LPSRA, environment, property, water quality and others. Thirteen significant issues were identified for evaluation with each of the reservoir options. Many of the thirteen issues included a number of sub-issues; for example, environmental included 12 sub-issues.

The evaluation performed resulted in a qualitative analysis as to the positive or negative impacts that a given reservoir option would have upon an issue or sub-issue. Each issue or sub-issue was given a rating ranging from –5 to +5 to reflect the severity of the negative or positive impact, respectively, as compared to the impact from the as-designed condition, which was given a rating of 0 in all cases. Sub-issues were given a weight to reflect their importance within an issue, so that each issue had a resultant rating for each reservoir option. The summary of the results of the ratings are given in Table 6.19.

The Total Weighted Valuation for each of the reservoir options showed the 127,000 AF as-designed condition as most highly rated, with a value of 0, the 257,000 AF reservoir as second with a value of –0.18 and the 500,000 AF reservoir as third with a value of –0.39. These compare with the least favorable option, the 40,000 AF reservoir, with a value of –1.62.

Construction magnitude, water storage, recreation, and environmental impacts are the major issues associated with any remediation or change of the Perris Dam or Lake Perris reservoir, accounting for 64 percent of the weighting given to all thirteen issues.

Sensitivity analysis showed that, with a 33 percent increase or decrease in the weighting given to each of the four major issues, the rankings of the two highest ranked reservoir options (Elev. 1588 and 1640) remained essentially unchanged. The ranking results of the sensitivity analysis are given in Table 7.2.

We recommend that a further benefit/cost analysis be conducted on the two most highly ranked reservoir options. DWR has already done extensive study of the remediation of the dam to return the normal maximum water level to 1588 ft. with a storage volume of 127,000. Additional studies, including preliminary designs of all affected features to estimate construction and modification costs, as well as recreation and environmental mitigation/enhancement costs, are needed for the two preferred options. The reservoir sizes studied were selected based on MWD, CVWD, and DWA's initial request and follow-up discussions with DPR.